



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/830,507 | 06/15/2001 | Chai-Jing Chou | 44407 | 8190 |

22515 7590 02/21/2003
THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION
2301 N BRAZOSPORT BLVD
FREEPORT, TX 77541-3257

| |
|----------|
| EXAMINER |
|----------|

YOON, TAE H

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1714

DATE MAILED: 02/21/2003

§

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/1830.507

Applicant(s)

Ehoy et al.

Examiner

T. Yoon

Group Art Unit

1714

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-19 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-19 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
 - ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Art Unit: 1714

The end of line 1 in claim 4 is illegible.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3, 4, 7, 8 and 14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims recite a determination of the weight percent of the single layer and multiple layers of silicate material by transmission electron microscopy (TEM). However, there is no teaching in the specification with respect to such measurement. A sliced TEM sample would contain silicate material (long axis or short axis) perpendicular and parallel to the light source, and thus, it would not be a simple measurement. For example, it would look like a single layer when flat surfaces of multiple layers of silicate material are situated perpendicular to the light source.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1714

Claims 4, 8, 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These are improper multiple dependent claims and thus are indefinite since multiple dependent claims cannot depend on another multiple dependent claim.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 93/04117 or Christiani et al (US 5,747,560) in view of Suss et al (US 4,558,075), or further in view of Brown et al (US 4,964,918).

WO and Christiani et al are similar, and the examiner points out WO.

WO teaches a melt-blending of thermoplastics or vulcanizable rubbers or blends thereof with intercalated layered silicates in abstract, pages 6, 10-12, 27-31 and examples. Said layered silicates comprise 1 layer (page 31, lines 10-15) which meets the instant limitation of the weight ratio. Said layered silicates are modified with quaternary ammonium compounds.

Art Unit: 1714

The instant invention further recites a polyvalent anionic organic material modification. Suss et al teach layered silicates modified with an organic cation-organic anion complex at col. 9, lines 48-65, col. 11, lines 64-68 and col. 12, lines 7-22 and 49-66. At least some of anionic groups of polyacrylic acid would inherently located at the edge. Said layered silicates yields a good storage ability (col. 1, lines 51-58) due to a good miscibility of said layered silicates modified with an organic cation-organic anion complex and a binder. Brown et al also teach a good disperseness of polyacrylic acid treated layered silicates at col. 3, line 31 to col. 4, line 26.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to utilize layered silicates modified with an organic cation-organic anion complex as fillers in a melt-blending of WO since WO teaches a melt-blending of thermoplastics with intercalated layered silicates and since the advantage (good storage ability) of polyacrylic acid treated quaternary ammonium intercalated layered silicates in polymeric systems is well known as taught by Suss et al, and Brown et al further teach a good disperseness due to a bonding of negatively charged sites with positively charged sites exposed on the edges of each clay crystal.

Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasumi et al (US 4,810,734) or Polansky et al (US 6,287,992) in view of Suss et al (US 4,558,075), or further in view of Brown et al (US 4,964,918).

Art Unit: 1714

Kawasumi et al teach a process for producing composite material by polymerization of monomers in the presence of onium ion modified layered silicates at col. 3, line 20 to col. 4, line 32 in examples. Said onium ion has a carboxyl group (col. 3, line 35).

Polansky et al teach a process for producing composite material by polymerization of monomers in the presence of modified layered silicates in examples. Surface modification of layered silicates with a compound having a functional group such as amino or carboxy is taught at col. 7, lines 37-48.

The instant invention further recites a polyvalent anionic organic material modification. Suss et al teach layered silicates modified with an organic cation-organic anion complex at col. 9, lines 48-65, col. 11, lines 64-68 and col. 12, lines 7-22 and 49-66. At least some of anionic groups of polyacrylic acid would inherently be located at the edge. Said layered silicates yields a good storage ability (col. 1, lines 51-58) due to a good miscibility of said layered silicates modified with an organic cation-organic anion complex and a binder. Brown et al also teach a good disperseness of polyacrylic acid treated layered silicates at col. 3, line 31 to col. 4, line 26.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to utilize layered silicates modified with an organic cation-organic anion complex as fillers in polymerization of Kawasumi et al or Polansky et al since Kawasumi et al and Polansky et al teach polymerization of monomers in the presence of onium ion modified layered silicates and since the advantage (good storage ability) of polyacrylic acid treated quaternary ammonium intercalated layered silicates in polymeric systems is well known as taught by Suss et al and since

Art Unit: 1714

Kawasumi et al and Polansky et al teach an anionic group such as carboxyl on layered silicates and since Suss et al equate mono- and poly-valent anionic compounds, and Brown et al further teach a good disperseness due to a bonding of negatively charged sites with positively charged sites exposed on the edges of each clay crystal.

The insertion of continuing data in the beginning of the specification is needed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tae H. Yoon whose telephone number is (703) 308-2389. The examiner can normally be reached on Monday to Thursday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

THY/February 13, 2003



TAE H. YOON
PRIMARY EXAMINER